

Docket No. RM2020-2

Public Representative Comments

BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, DC 20268-0001

Periodic Reporting
(Proposal Ten)

Docket No. RM2020-2

PUBLIC REPRESENTATIVE COMMENTS
ON PROPOSED CHANGE IN ANALYTICAL PRINCIPLES
USED IN PERIODIC REPORTING

(February, 28, 2020)

I. INTRODUCTION

The Public Representative hereby provides comments pursuant to Commission Order No. 5336.¹ In that order, the Commission established the above-referenced docket to receive comments from interested persons addressing the Postal Service's proposed change of analytical principles related to periodic reporting. *Id.*, 5. The Postal Service filed the Petition pursuant to 39 C.F.R. § 3050.11, along with a supporting study

¹ Notice of Proposed Rulemaking on Analytical Principles Used in Periodic Reporting (Proposal Ten), December 4, 2019 (Order No. 5336).

by Professor Michael Bradley, provided separately, in USPS-RM2020-2/1.² The Postal Service provided additional information in its responses to two Chairman's Information Requests (CHIRs).³

The relevant standard the Commission uses to determine whether or not to accept a modification of analytic principles, is whether the change will "improve the quality, accuracy, or completeness of the data or analysis of data contained in the Postal Service's annual periodic reports" 39 *CFR* § 3050.11(a). The Commission also states that such petitions "should include the data, analysis, and documentation on which the proposal is based, and, where feasible, include an estimate of the impact of the proposed change on the relevant characteristics of affected postal products" 39 *CFR* § 3050(b)(1).

In Section V, the Public Representative argues that the Bradley Report does not respond to the concerns the Commission expressed in R84-1, namely, that the Postal Service did not document the appropriateness of using the WSC index as an accurate and reliable measure of postmaster workload.⁴ See, *R84-1 Opinion, Volume 2, Appendix J, [0014]*. Nor did the Bradley Report update the workload factors and/or the weights underlying the WSC index to reflect current operating conditions.

In Section V, the Public Representative explains why using WSCs as a measure of postmaster workload, results in parameter (and subsequently variability) estimates which are biased to an unknown and unknowable extent. They suffer from measurement and non-sample error. Accordingly, the Public Representative strongly

² Petition of the United States Postal Service For the Initiation of a Proceeding to Consider Proposed Changes in Analytical Principles (Proposal Ten), November 29, 2019 (Petition); USPS-RM2020-2/1, "Investigating the Variability of Postmaster Costs" (Bradley Report), by Michael D. Bradley, Department of Economics, George Washington University Washington, D.C. 20052.

³ Responses of The United States Postal Service to Questions 1-5 of Chairman's Information Request No. 1, July 12, 2019; Responses of the United States Postal Service to Questions 1-8 of Chairman's Information Request No. 1, January 2, 2012; and Responses of The United States Postal Service to Questions 1-7 of Chairman's Information Request No. 2, January 29, 2020.

⁴ Docket No. R84-1, Op. Rec. R84-1 (R84-1 Opinion), Volume 2, Appendix J, September 7, 1984.

recommends the Commission reject the model proposed by the Bradley Report, initiate a Technical Conference to discuss the feasibility of using alternate measures of workload, which will be followed by either a Notice of Public Inquiry, or a new rulemaking docket to estimate the variability of postmaster costs, depending on the outcome of the Technical Conference. The Commission need not be concerned that about delaying the adoption of an accurate measure of postmaster variability. The Postal Service has had over 30 years to respond to the Commission's concerns about WSCs. Since the estimated cost changes are relatively small, maintaining the current methodology another year or two, in order to develop unbiased variability estimates, would be preferable to adopting a biased model built upon a mismeasured independent variable.

II. PROCEDURAL HISTORY

On December 4, 2019, the Commission issued a Notice of Proposed Rulemaking on Analytical Principles Used in Periodic Reporting (Proposal Ten), appointed a Public Representative, and provided interested persons with an opportunity to comment on the Postal Service's proposed change. *See, Order No. 5133*. The Postal Service responded to CHIR1, Questions 1 through 5, on January 2, 2020, and to CHIR2, Questions 1 through 7, on January 29, 2020.⁵

III. BACKGROUND

A. Wang's Model

Witness Wang (Wang or Wang Model) estimated the variability of postmaster costs in Component 1.1 for EAS Grades 22 and below. He used a semi-log model to

⁵ See, Docket No. RM2020-2, Responses of the United States Postal Service to Questions 1-5 of Chairman's Information Request No. 1, (Responses to CHIR 1), January 2, 2020; and Docket No. RM2020-2, Responses of the United States Postal Service to Questions 1-7 of Chairman's Information Request No. 2 (Responses to CHIR 2), January 29, 2020.

regress 1979 salaries, for postmasters in EAS Grades 22 and below, against matching WSCs to capture the non-linear relation between salaries and WSCs. *Wang*, 26.⁶ WSC's in each Post Office are the weighted average of 9 Quantitative Indicators of Activity, such as "General Delivery Families Served," and 5 Revenue Units (Revenue Factors), such as the "first 25 revenue units," which corresponded to the first \$3,578 of revenue. *Wang*, 19, *fn.* 3. Hereinafter, the Public Representative will refer to all of these factors as "Revenue and Quantitative Workload Factors," or more simply, as "Workload Factors." It was necessary to weight each of the workload factors in order to combine them into a single measure. This was accomplished by the Expanded Postmaster Criterion System (ECPS). *Id.*, 13.

When expressed in a linear form and after algebraic manipulation so that postmaster salaries were on the left hand side of the equation, and corresponding WSC's were on the right hand side, Wang's model had the following form (where i equals all observations):

$$\text{Salary}_i = \alpha + \beta \cdot \ln(\text{WSC}_i) \quad \text{Equation 1}$$

Wang's Model estimates that a one percent increase in WSCs will bring about an 18.23 percent salary increase. *Wang*, 30. He applies this variability estimate to the "accrued cost for Component 1.1, covering postmasters at AOs in grades EAS-22 and below, does vary specifically with the activity index of Workload Service Credits (WSCs)." *Id.*, 6.⁷ He goes on to clarify that only salaries in sub-component 1.1.1, "Minimum Salary by Grade Level," vary with volume. The other sub-components of the Postmaster Component — Longevity and Merit (1.1.2) and Salary-Related Expenses (1.1.3) are not

⁶ Docket No. R84-1, USPS-T-12, Direct Testimony of Nai-Chi Wang, at 26, November 10, 1983 (Wang or Wang Testimony).

⁷ Workload Service Credits were established by the Expanded Postmaster Criterion System (ECPS) Task Force in August, 1978. The ECPS classified the functional difficulty of activities in Post Office into 3 categories of increasing difficulty, and established 14 workload and revenue factors, which it weighted according to its sense of their independent impacts on Workload Service Credits (Salary?). *Wang*, 14).

considered to vary with volume. *Id.*, 9.⁸ See also, *Responses to CHIR 1, Response to Question 3.*⁹ But Salary-Related Expenses were partly piggybacked on sub-component 1.1.1. *Id.*, 33.

B. Bradley Report Rejects Wang's Original Model

The Bradley Report rejected the Wang model partly because it regressed minimum salary levels for each of 18 grades against the log of the average WSC level for each grade. By averaging WSCs, Wang effectively transformed a model with many continuous observations into an 18 point step function, with very few observations, which would have reduced the efficiency of its estimates. Bradley Report, 9.

The Bradley Report explains that because PostPlan eliminated Postmaster EAS Grades below EAS-18, it incorporated several changes the Postal Service made to the WSC-EAS System, such as new minimum salary levels, new WSC ranges, and new Zone of Tolerance (ZOT) Ranges for EAS-Grades 20, 21, 22, 24, and 26. It split EAS Grade-18 into EAS-18 and EAS-18B, where EAS-18 was comprised of Postmasters with the lower half of WSC values in EAS-18, and EAS-18b was comprised of Postmasters with the higher half of WSC values. *Id.*, 5. The Bradley Report next states “[t]he FY 2019 Postmaster salary scale was combined with the average April 2019 WSCs for five EASs grades to re-estimate the semi-log model” [of Wang].¹⁰ *Id.*, 5. After correcting for a previous error using the wrong mean value to calculate postmaster variability, the Bradley Report tested a version of Wang's model by running the same

⁸ Witness Wang explains that costs in sub-component 1.1.3, Salary-Related Expenses,” are piggybacked onto the volume variable costs estimated from accrued costs in sub-component 1.1.1. Consequently, costs in sub-component 1.1.3 are attributable, but the Postal Service does not determine the variability of this component.

⁹ Docket No. RM2020-2, Responses of The United States Postal Service to Questions 1-5 of Chairman's Information Request No. 1 (Responses to CHIR 1), July 12, 2019. Clarifies that the Postal Service no longer piggy-backs salary-related costs onto volume variable costs, but applies estimated variabilities to sub-component 1.1.3.

¹⁰ The reproduction of the Wang Model used currently available data pertaining to EAS Grades 18, 18b, 20, 21, and 22.

regression, but this time by regressing minimum salaries for each EAS grade against all of the available WSC observations (over 13,000). However, because the model still had only 5 observations, it still produced a 5 level step function as the original model. *Id.*, 12.

IV. BRADLEY REPORT RECOMMENDS LOGISTIC MODEL WHICH REGRESSES MINIMUM SALARIES AGAINST WSCS FOR EACH OF SIX PAIRS OF EAS GRADES.

A. Data Construction

The first step taken by the Bradley Report was to carry forward the WSC ranges, Zone of Tolerance ranges, and Minimum Salaries for EAS Grades 20, 21, 22, and 24, and 26, which the Postal Service established after PostPlan. It split EAS-18 into EAS-18 and EAS-18b, which required setting new WSC ranges, new ZOT ranges, and new minimum salaries levels.¹¹ Table IV-1 below, compares the EAS Grades, minimum salary, ZOT ranges for reducing a postmaster's EAS grade (Lower ZOT Range), WSC range which defines each grade (Grade's Defining WSC Range), and ZOT ranges for increasing a postmaster's EAS grade (Upper ZOT Range) before and after the implementation of PostPlan, including the Bradley Report's modifications to EAS-18 and EAS-18b.¹²

¹¹ The Bradley Report (at 1) discusses the manner in which ZOTs work to influence the manner in which a postmaster's grade may be increased or decreased. "The Zone of Tolerance is a procedure put into place by the Postal Service to preclude erratic pay grade variations. If a post office's workload is above the top of what is required for its current grade, it will be placed in the upper Zone of Tolerance, to see if the workload increase is sustained for two years. If so, then the pay grade will be changed and the Postmaster's salary increased. Similarly, if a post office's workload is below the bottom of what is required for its current grade, it will be placed in the lower Zone of Tolerance to see if the workload decrease is sustained for two years. If so, the pay grade will be changed."

¹² The "Before PostPlan" part of Table IV-1 excludes grades which were eliminated by PostPlan.

Table IV-1
Minimum Salaries, Zones of Tolerance and WSC Ranges By Grades
Before and After PostPlan

| Before PostPlan | | | | |
|---|----------------|------------------------|----------------------------|------------------------|
| EAS Grade | Minimum Salary | Lower ZOT Range (WSCs) | Grade's Defining WSC Range | Upper ZOT Range (WSCs) |
| 18 | 18,000 | 1,869 - 2,075 | 2,076 - 5500 | 5501 - 6049 |
| 20 | 20,200 | 4,951 - 5,500 | 5,501 - 13000 | 13001 - 14299 |
| 21 | 21,300 | 11,701 - 13,000 | 13,001 - 26000 | 26001 - 28599 |
| 22 | 22,500 | 23,999 - 26,000 | 26,000+ | None |
| After PostPlan & Bradley Report's Modifications | | | | |
| EAS Grade | Minimum Salary | Lower ZOT Limit | Grade's Defining Range | Upper ZOT Limit |
| 18 | 54,081 | None | 0-2,075 | 2,076-2,292 |
| 18b | 59,330 | 1,869-2,075 | 2,076-5,500 | 5,501-6,049 |
| 20 | 65,300 | 4,951-5,500 | 5,501-13,000 | 13,001-14,299 |
| 21 | 71,000 | 11,701-13,000 | 13,001-26,000 | 26,001-28,559 |
| 22 | 73,300 | 23,401-26,000 | 26,001-68,200 | 68,201-75,020 |
| 24 | 82,000 | 61,381-68,200 | 68,201-167,200 | 167,200-183,919 |
| 26 | 99,900 | 150,481-167,200 | 167,201+ | None |

Sources: Before PostPlan: Wang Report, Exhibit USPS-12b, p. 38. After PostPlan, "What is My Office Level Using Form PS 150, National League of Postmasters of the United States (NALPUS), Slide 16 (https://images.slideplayer.com/24/7244912/slides/slide_16.jpg), and USPS Response to CHIR1, question 2.

B. Testing Linear and Log Probability Models Using Newly Constructed Data

The Report also investigated the feasibility of using a linear probability model (LPM1), and a log probability model (LPM2) instead of Wang's semi-log model. Both LPMs would have utilized all of the more than 13,000 observations.

"In the case of Postmasters, a linear probability model would be estimated for each of the EAS grade pairs. That is, there would be one equation estimated for the step from EAS-18 to EAS-18B, another for the step between EAS-18B and EAS-20, and so on. In each equation, the dependent variable takes a value of zero for the lower EAS grade, say, EAS-20, and a value of one for the next higher EAS grade, say, EAS-21." *Bradley Report, 13.*

An LPM1 and LPM2 was used to estimate the probability of moving up a grade. Unfortunately, neither model produces probability estimates designed to yield

probabilities between 0 and 100 percent (at least without truncating the models). Approximately one-fourth of the probability values estimated using LPM1 or LPM2 were negative. The Bradley Report rejected these models because models which produced such a large share of meaningless estimates would not be appropriate for estimating postmaster variabilities. *Id.*, 15.

C. Logistic Models

After plotting minimum salaries against WSCs for each grade, the Bradley report observes that they exhibit a sigmoidal shape, which often supports using a logit or logistic model. Moreover, the logistic is designed to predict probabilities of moving up a grade, which naturally fall between 0 and 100 percent. *Id.*, 18. The Bradley Report identifies two general methods of estimating a logistic model.

“The key modeling question for choosing a logit model is whether the pay steps should be considered individually or as a single group. If the former is the correct characterization, then separate parameters should be estimated for each step, whereas if the latter is correct, a single estimated beta should be estimated for all steps.” *Id.*, 21

1. Multicategory (Multinomial) Logistic Model

The second method appears to be what Agresti refers to as a Multicategory Logistic Model. He explains that:

“Multicategory logit models simultaneously use all pairs of categories by specifying the odds of outcome in one category instead of another Software for multicategory logit models fits all the equations ... simultaneously. Estimates of the model parameters have smaller standard errors than when binary logistic regression software fits each component equation.”¹³

¹³ Agresti, A., *An Introduction to Categorical Data Analysis* (Agresti), Second Edition, Wiley & Sons, Inc., 2007, p. 174.

The Bradley Report does not explore multicategory logistic regression and then examine whether or not it is more efficient than a weighted average of binary regression results.¹⁴ Nor does it cite any economic literature supporting its choice of the binary over the multicategory logistic. Rather, it uses an intuitive argument that separate binary regressions should be run when the WSC bands substantially differ by grade levels.¹⁵ It argues that EAS grades with wider WSC bands (or ranges) will require a larger change in WSCs to move postmasters in that grade to the next higher EAS grade. It appears to assume that a multicategory logistic model requires constant marginal effects across grades, but grades with wider WSC ranges will have slower response rates than those with wider WSC ranges per grade.¹⁶ *Id.*, 21-22. Accordingly, the Bradley Report rejects the multicategory (multinomial) model. However, Agresti's mathematical presentation appears to incorporate different log odds ratios, and could therefore be used to model different marginal effects and response rates, for each grade level within a single model.¹⁷ Agresti, 173.

¹⁴ The Bradley Report estimates probability distributions for moving up an EAS grade, for each of the 6 possibilities. It then calculates the marginal effect of each regression, the marginal costs for moving up one-level from each category the matching cost elasticity, and it then takes the average cost-weighted elasticity.

¹⁵ The Report does not cite any economic literature supporting this method, and it does not consider the loss of efficiency from running multiple regressions.

¹⁶ "If the WSC bands (the ranges of WSCs for the various grades) are about the same for all EAS grades, then a given increase in WSCs has the same ability to move a Postmaster up a grade regardless of which grade she or he is currently positioned. On the other hand, if there are material differences in the size of the bands, then a given change in WSCs will have a differential impact on the likelihood of moving up a grade at different EAS levels. ... In other words, it takes a much larger increase in WSCs to move up a grade for an EAS-22 or EAS-24 Postmasters than it does for EAS-18 or EAS-18B Postmaster. This suggests that there are different speeds of transition, with the transition speed falling as the EAS grade increases and that estimating separate logit models for each grade step is appropriate."

¹⁷ Baseline Category "[l]ogit models for nominal response variables pair each category with a baseline category. When the last category (J) is the baseline, the baseline-category logits are:

$\log \frac{\pi_j}{\pi_J}$, $j = 1 \dots J - 1$. Given that the response falls in category j or category J , this is the log odds that the response is J . For $J=3$, for instance, the model uses $\log(\pi_1/\pi_3)$ and $\log(\pi_2/\pi_3)$. The baseline-category logit model with a predictor x is $\log\left(\frac{\pi_j}{\pi_J}\right) = \alpha_j + \beta_j x$, $j = 1, \dots, J - 1$."

2. Binary Response Logistic Models

The Bradley Report chose to utilize binary response logistic models. It runs a logistic regression of minimum salary for each grade, against the WSCs within that grade. The equation for the logistic regression is presented in Equation 2, below

$$\text{minsal} = e^{\alpha + \beta \text{WSC}_i} \quad \text{Equation 2}$$

The non-intercept parameter (β) measures the impact a change in WSCs will have on the minimum salary within each grade in which the regression is performed. Algebraic manipulation permits the presentation of a mathematical expression which calculates the impact of a change in the estimated parameters (β) on the log odds ratio, i.e. the probability of moving up a grade due to a change in WSCs:

$$\pi_i = \frac{e^{\alpha + \beta \text{WSC}_i}}{(1 + e^{\alpha + \beta \text{WSC}_i})} \quad \text{Equation 3}$$

In general terms, higher log odds ratios indicate faster speeds of transition between one grade and the grade above it. *Bradley Report, 20*. The Bradley Report presents the results of these regressions, which in Tables 9 and 14, show that the impact of a change in WSCs on the log odds ratio decreases as one moves from the EAS grade pair 18-18b, ..., to 24-26. *Id., 24, 29*. The results for each estimated parameter is significantly different from zero and produces high measures of R^2 -type statistics appropriate for the logistic regression.

The Bradley Report subsequently takes the derivative of the log odds ratio with respect to a change in WSCs to transform the estimated log odds ratio for each EAS grade to obtain the marginal effect associated with each pay grade. *Id., 31*. The next steps involve:

- creating a binary dependent variable for each EAS grade according to whether each WSC observation for each grade level has a greater than 50 percent chance of moving to the next grade level

(value = 1), otherwise assigning a value of 0 to the dependent variable value for that observation.¹⁸ *Id.*, 31.

- determining a single percentage change in WSCs to use to calculate the number of postmasters who have enough WSCs, so that a given percentage increase in WSCs would move them into a higher minimum salary grade (i.e. the theta value). *Id.*, 43-44.
- calculating the percentage change in costs (minimum salaries) due the number of postmasters who move up one grade due to a given percentage increase in WSCs. The Bradley Report makes this calculation for each EAS grade pair. *Id.*, 44.

3. Summary of Section

The Public Representative appreciates the thorough and thoughtful consideration made to develop and test alternative model, although he would appreciate being presented with an academic reference or possibly mathematical presentation explaining why the multicategory logistic should have been rejected. Nevertheless, the Public Representative recommends the Commission reject the Bradley Report's proposed model because the data problems are so substantial. Accordingly, his analysis will focus on identifying these data problems, and explain why they produce unacceptable variability estimates, rather than reviewing the other models the Bradley Report considered, but rejected.

V. PUBLIC REPRESENTATIVE'S ANALYSIS

A. Organization of Discussion

Section IV.B will discuss the econometric implications of not improving the determination of WSCs or developing an appropriate, alternate, independent variable. Section C. will discuss other problematic features of the proposed method, such as

¹⁸ This is a slight simplification of the formula used to create the binary dependent variables.

model selection and the choice of the theta parameter. Finally, Section IV.E will discuss the Public Representative's recommendations.

B. WSCs Should Not Be Used As Measure of Workload

1. Wang's Use of WSCs

As discussed in Section III. A., Wang's model used WSCs as the independent variable in his semi-log regression. WSCs are now available electronically once the data from PS Form 150 has been entered into the PS Form 150 database.¹⁹ WSCs were developed by the Expanded Postmaster Criterion System (ECPS) Task Force in 1979. It identified 9 quantitative indicators of postmaster workload and 5 revenue indicators of postmaster workload. In order to combine these different workload factors into a single index, the ECPS established weights for each workload factor. These weights reflected the ECPS' sense of the relative impact each workload factor had upon postmaster salary. Wang notes the ECPS Task Force determined the weights after a field study, which involved questionnaires, but leaves the impression that the final value of weights was based on unrecorded meetings and conversations among members of the Task Force. *See, Docket No. R84-1, Transcript, Volume. 9, page 4358, February 24, 1984.*²⁰

Accordingly, using weights to combine the 14 workload and revenue factors into a single index number for each post office severed the direct link between workload factors and the determination of WSC's. More importantly, by prioritizing factors (i.e. by establishing their weights) the ECPS predetermined much of the causal relation

¹⁹ The term "PS Form 150 database" was applied by the Public Representative. He was unable to find a named reference for this electronic database.

²⁰ The page number is not clear, but it is located at the fourth page once Chairman Steiger begins his questions from the bench. The exact text is: "The Witness: The task force, which I think two Postmasters were included in the task force – was a seven member task force that spanned 10 months. They went out in the field; they made visits; they made the questionnaires; and they made the surveys; they thoroughly studied the functional activities of post offices. And they came out with this comprehensive measure – they constructed this index, which they call the workload service credit."

between the combined workload factors to WSCs, making WSCs a faulty measure of postmaster workload and variability in response to workload changes.

There are other complications associated with using an observation of an independent variable which is the weighted average of underlying workload and revenue factors. Firstly, revenue units should not have been used. While revenue does vary with volume, so do most of the workload factors. Accordingly, it is very likely workload and revenue factors will either cancel or augment each other to some unknown extent in reality, which would result in a measurement or non-sample error of every observation.

Secondly, the weights were determined by “committee” (the ECPS). Witness Wang suggests that the value of each weight was based upon a consensus evaluation (i.e. subjective) of the ECPS field study results. Accordingly, it is very likely workload and revenue factors will either cancel or augment each other to some unknown extent in reality, which most probably will not be captured by the relative weights utilized to combine workload factors into a single WSC value for every observation.

In addition, because the weights were developed using subjective interpretation of the ECPS, and because WSCs are determined by revenue and workload factors in an unknown and unknowable way (due to interaction among the factors), WSCs mismeasure actual workload, which result in grossly biased variability estimates.²¹

²¹ The Public Representative maintains that the problem is not simply a case of poorly measuring available appropriate data. Measurement error also exists because those who created the measurement method had a human resource purpose in mind for their creation, thus introducing a tremendous amount of non-sample error. Accordingly, the data is not appropriate to use for variability estimation. Although the Bradley Report refers to the data as operational data, it would be more correct to refer to it as human resource data. WSCs, Zones of Tolerance, and EAS-Grades have been designed and relate to each other in order to produce a desired management control and incentive structure. For example, the March 3, 1983 Issue of the Postal Bulletin (at 22-23) explains that “[t]he Zone of Tolerance was established by expanding the Workload Service Credit ranges for each EAS grade, thereby requiring substantial changes in workload to trigger a change in the grade of the office. This facilitates stability in change from one grade to another (upward or downward). The encumbered office will not change grade unless (1) the WSCs fall below or exceed the Zone of Tolerance WSCs for the current grade; or (2) the WSCs fall within the Zone of Tolerance for the current grade and have consistently remained within the Zone for two years. While zones of tolerance do make it more difficult for a postmaster to move up a pay grade, in

Finally, it should be noted that the Commission expressed great concern about the accuracy of the WSCs:

“Unfortunately, the Postal Service has not attempted any functional analysis. Instead, in conclusory terms, witness Wang indicates that the workload factors which determine postmaster salary serve the same purpose. Witness Wang states that the WSC index is part of a chain of causation wherein functional activity translates into workload service credits which in turn equals costs. According to witness Wang each of the ten workload factors represent indirect measures of functional activity in various degrees and mixes. For, example, workload factor number 1, the number of families served by general delivery, "is an indirect measure of window transactions, mail volume, number of customers served, as well as a direct measure of incoming separations." USPS-T-12 at 19. How this is an improvement or even equates to functional analysis of activity performed by postmasters is not apparent. At best, it could be said that some of these indirect measurements involve functional activity, and for others there may be a correlation between these measures and the time spent performing various functional activities. It is difficult to ascertain how these surrogates represent improvements over actual functional analyses of postmaster activities.” *See, Docket No. R84-1, Op. Rec. R84-1, Volume 2, Appendix J, [0014]*

2. The Bradley Report’s Use of WSCs

The Postal Service took several steps to update WSCs and make them available electronically by inputting data from PS Form 150 into an electronic database. It reset the minimum salaries corresponding to the postmaster EAS grades remaining after PostPlan; set the minimum salary, Zone of Tolerance range and WSC level for EAS-Grade 26; and it included the revenue associated with the sorting of non-DPS letters and flats as a component of WSCs (what weight was used). It retained the Zones of Tolerance and WSC ranges for EAS-Grades 20, 21, 22, and 23. The Bradley Report developed minimum salaries, ranges of WSCs and Zones of Tolerance for EAS Grades 18 and 18b. Neither the Postal Service, nor the Bradley Report questioned, and with the

terms of measuring the variability in response to workload changes, the “stability” achieved actually reduces variability.”

exception of the addition of manually sorted letters and flats, did not update, the weights used to combine WSCs into a single measure.

Section V. B. 1 discussed the reasons why WSCs are measured in error. Measurement and non-sample errors which are produced using data which implicitly determine the quantitative measure of the causality between the independent and dependent variables do not just bias Logistic Regression estimates. They produce completely incorrect estimates.

The determination of the weights for WSCs indicates a prior knowledge of the causal relation between the individual workload factors which comprise WSCs. But prior knowledge is also used to set EAS Grades using WSCs. Since the ECPS did not test the validity or statistical significance of its prior assumption(s) of the causal nature of workload factors and salary, there is a very high probability that WSCs have always been measured in error. Since the Bradley Report did not modify the weights to reflect operational and economic conditions which differ today from those of 1974, it is certain that WSCs are measured in error and are not an appropriate data source for postmaster variability estimates.²²

Some of the problem could have been addressed if the Bradley Report had explicitly modeled the relation between workload factors and hours worked in variable activities, perhaps as the first stage of a 2SLS model. However, it did not do this, nor did it attempt to develop a direct measure of workload. Accordingly, it continues to rely upon data which cannot but yield strongly biased parameter estimates. Because the Bradley Report did not update or document the development of the weights for the workload and revenue factors, it does not comply with the requirements of 39 CFR § 3050.11(a) and should be rejected.

Furthermore, if the Commission accepts the Bradley Report's method of developing workload data, it will establish a precedent that the current 14 revenue and

²² For example, using revenue factors as a proxy for mail handled, may be less desirable than a dim-weighted measurement of mail handled, due to the increasing importance of package volume..

workload factors and their weights are acceptable independent variables. It will also establish a precedent that simply updating the values of inappropriate variables is sufficient to maintain their validity.

C. Determining A Single Percentage Change To Determine Elasticities Is Problematic

Section IV. C. 2 mentioned that the Bradley Report identified a single percentage change in WSCs which it would apply to existing WSC levels in order to transform the marginal effect calculation of each EAS Grade into a measure of the cost elasticity associated with each EAS grade. In other regression analyses, the Commission has determined that the marginal cost associated with a cost driver should be divided by the mean value of the cost driver to determine variability.²³ *Bradley Report*, 4.

Later, the Bradley Report asserts that “[f]or models with continuous dependent variables, the appropriate evaluation point is the mean of the cost driver or explanatory variable. But with a discrete dependent variable, that may no longer be the case.” *Id.*, 31. It then presents a series of arguments rejecting use of the mean value of the dependent variable, or the average annual growth rate in WSC’s by grade:

- doing so would yield variability estimates close to zero percent because the mean value of the logistic is 50 percent, which is most often in the area before the Zone of Tolerance is reached. *Id.*, 31-32.
- average annual growth in WSCs between April 2018 and April 2019 resulted only in a net increase in 5 postmasters over the year. *Id.*, 40.
- average annual growth in WSCs between April 2018 and April 2019 was only 0.61 percent. *Id.*, 41.
- annual growth rates in WSCs by grade between April 2018 and April 2019 ranged only from -0.18 percent to 2.09 percent. *Id.*, 42.

²³ See, Postal Rate Commission, Opinion and Recommended Decision, Docket No. R87-1, at 246-247, Postal Rate Commission, Opinion and Recommended Decision, Docket No. R90-1 at III-16, and Postal Rate Commission, Opinion and Recommended Decision, Docket No. R97-1 at 210. Also Order for City Carriers New Study.

- “the number suggest that, at least for 2018 and 2019, there is relatively little growth in WSC’s on a year-over-year basis. However, to account for the *possibility* (emphasis added) that the variability could be applicate to a variety of circumstances, a sensitivity test was performed for a wide range of possible WSC changes. *Id.*, 42.

The Bradley Report assumes that something is wrong if its chosen model does not produce a variability estimate similar to Wang’s model. It does not consider the possibility that its model could show there was no significant volume variability. The Public Representative would not consider such a conclusion problematic given the unreliability of the data which is used to calculate the independent variable – WSCs. It develops a method to examine the “possibility” that WSC’s could change at a much greater rate than recent historical evidence suggests. The Public Representative finds it difficult to take this contention seriously, since the Postal Service introduced Zones of Tolerance specifically to reduce the rate of growth in postmaster grade increases.

The method the Bradley Report supports using a range of growth factors (thetas) to examine the possibility that WSC’s could change more than recent evidence suggests, compares a base case, which calculates the number of postmasters which would move to a higher level, and the cost associated with that higher grade level, against several scenarios of the rates of growth of WSCs, the lowest of which, 2.5 percent, is greater than the highest annual growth in WSCs. *Id.*, 42, Table 42. Each “test” case (θ) determines the number of postmasters who would move to the next highest grade and calculates the additional cost associated with this increase. Knowing the cost of a base case and the costs of each test case, it can calculate the percentage change in costs due to the percentage increase of WSCs associated with each test scenario. The Report tests variability calculations when the growth rate of WSCs (θ) is 2.5, 5.0, 7.5, 10.0, 12.0, 15.0, 17.5 and 20.0 percent. *Id.*, 38.²⁴

²⁴ See *also*, Docket No. RM2020-2, USPS-RM2020-2/1, Public LRs, Calculate Variabilities, Files: Sensitivity Analysis For 18 and 18B.sas, Sensitivity Analysis For 18B and 20.sas, Sensitivity Analysis For

The Bradley Report seems to recognize that this method is somewhat ad hoc, for it does not determine which, if any, of the test case scenarios (θ) should be used for each grade. Accordingly, it argues that the analyst should choose the test scenario which yields stable, cost weighted elasticity estimates across different grade levels. It first calculates the elasticity for each test case for each grade,²⁵ and then calculates the cost-weighted average elasticity (across grades) for each test case in order to learn the stability of the different test cases across grade levels. This effort is reproduced in Figure 10 of the Bradley Report. *Id.*, 44. The Report concludes that “cost-weighted variabilities for the different WSC growth rates ... show that the cost-weighted variability is slightly lower for the two smallest WSC categories but then stabilized in the range of a 7 percent variability. The results of the sensitivity analysis support the use of a 10 percent WSC change (θ) as the benchmark for calculating Postmaster variabilities.” *Id.*, 44.

The Public Representative has two concerns with this method. First, it calculates the cost weighted variability average across grades for each test case of above-normal growth in WSCs (θ). It is not surprising that the variabilities for each test case will be relatively similar. The Bradley Report justifies presents cost weighted averaging as a method of determining the “overall potential” impact of different WSC growth rates (θ). *Id.*, 44. It doesn’t determine the overall potential impact in general, but chooses the test growth rate of 7.0 percent because this is the rate at which the impact of a test growth rate in WSC’s (θ) produces a stable variability estimate. *Id.*, 44.

Table V-1 shows the cost weighted variabilities of each test case growth rate.²⁶

20 and 21.sas, Sensitivity Analysis For 21 and 22.sas, Sensitivity Analysis For 22 and 24.sas, and Sensitivity Analysis For 24 and 26.sas.

²⁵ See, *Id.*, 43, Table 23.

²⁶ This is a simplified version of Figure 10 in the Bradley Report. *Id.*, 44.

Table V-1
Cost-Weighted Variabilities for Different Test Case Growth Rates

| % Change WSC (θ) | 2.5% | 5.0% | 7.5% | 10.0% | 12.5% | 15.0% | 17.5% | 20.0% |
|-----------------------------|------|------|------|-------|-------|-------|-------|-------|
| Cost Weighted Variabilities | 5.8% | 6.3% | 6.8% | 7.0% | 7.0% | 7.1% | 7.2% | 7.3% |

It's one thing to claim to choose a test case WSC growth rate (θ) where the resulting variability levels are relatively stable, and another matter to both claim that 7 percent is that level and that 10 percent is the appropriate matching variability. Examining Table V-1 shows that a 12.5 percent test case growth rate is also 7 percent, yet the Bradley Report chose 10 percent. No explanation is given. Along these lines, there is negligible difference in the cost weighted variability between test WSC growth rate of 6.8 percent and 7.3 percent. The median test case change of this range is 12.5 percent.

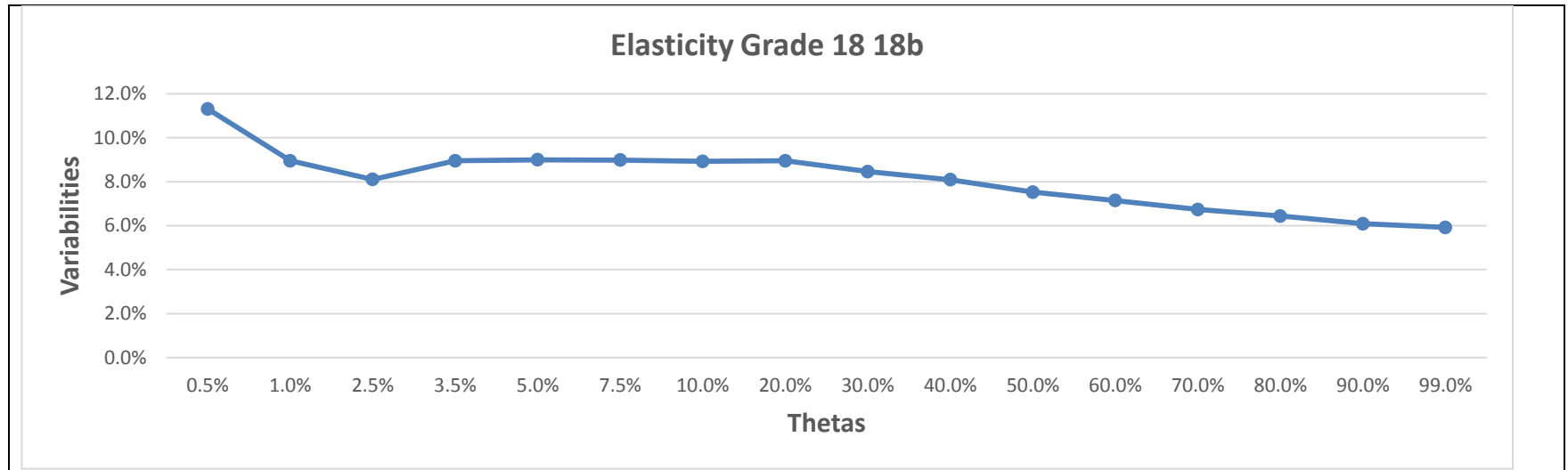
Secondly, using cost-weighted variabilities to choose the appropriate test case percent changes in WSCs (θ) will tend to blend the results together. Similarly, the Bradley Report does not explain why it limited test case changes in WSCs to a low value of 2.5 percent and a high value of 20 percent. The Public Representative tested a wider range of test case percentage growth in WSCs (θ), ranging from 0.5% to 99.9%. The results are presented in in six charts, each of which graph a wide range of θ s by 6 grade changes, against its matching variability. *See, Docket No. RM2020-1, PR-LR1, File Summary Thetas.xlsx, Sheet "Summary."*

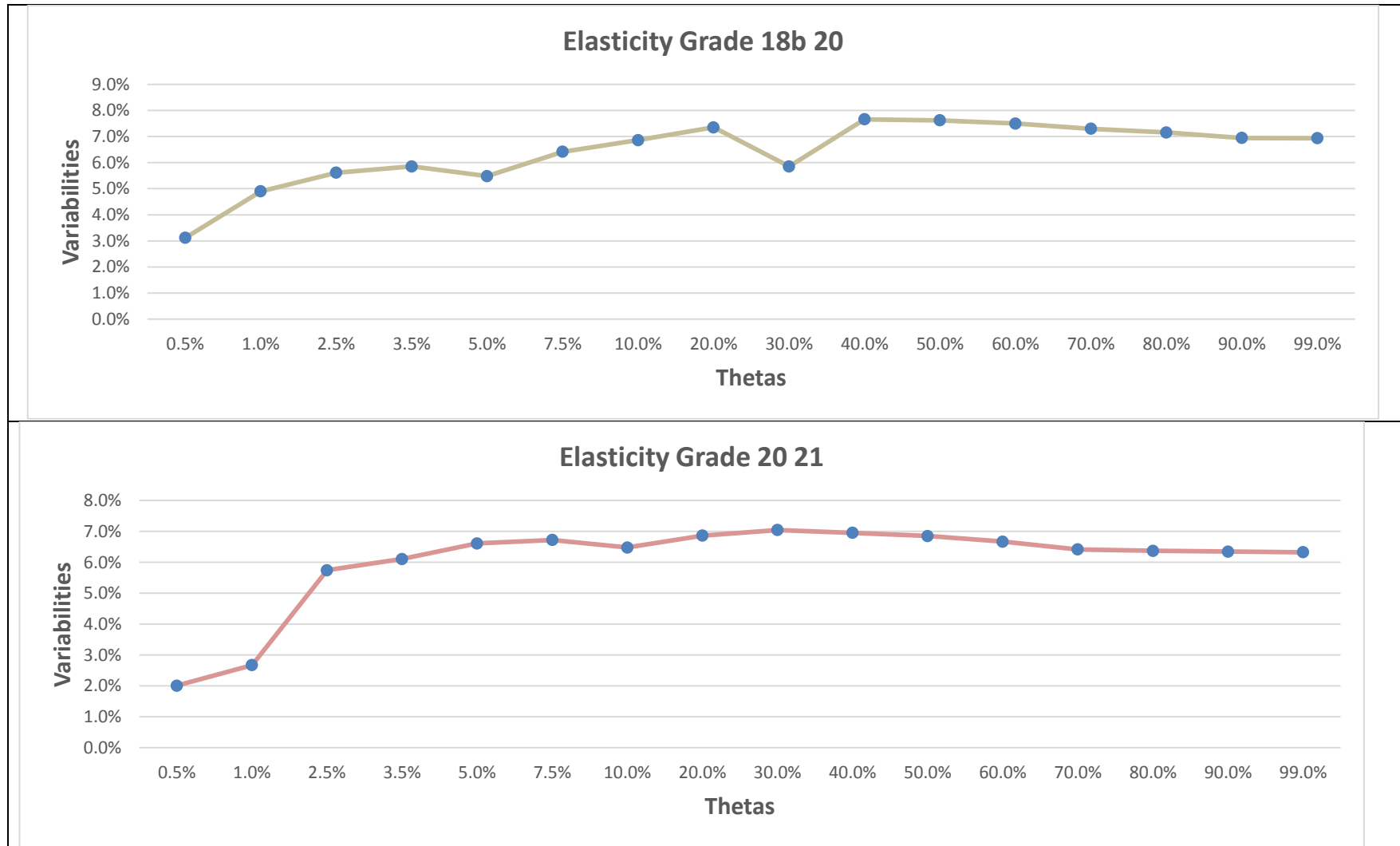
These charts question the validity of using cost-weighted averages and narrowly limiting test case percentage growth in WSCs (θ). The chart entitled "Elasticity Grade 18 to 18b," shows variabilities were stable between θ s ranging from 3.5 percent to 20 percent. The chart entitled "Elasticity Grade 18b to 20," shows variabilities were stable between θ s ranging from 40 percent to 99 percent. The chart entitled "Elasticity Grade 20 to 21," shows variabilities were stable between θ s ranging from 7.5 percent to 99 percent. The chart entitled "Elasticity Grade 21 to 22," shows variabilities were stable between θ s ranging from 5 percent to 10 percent and then 20 percent to 99 percent.

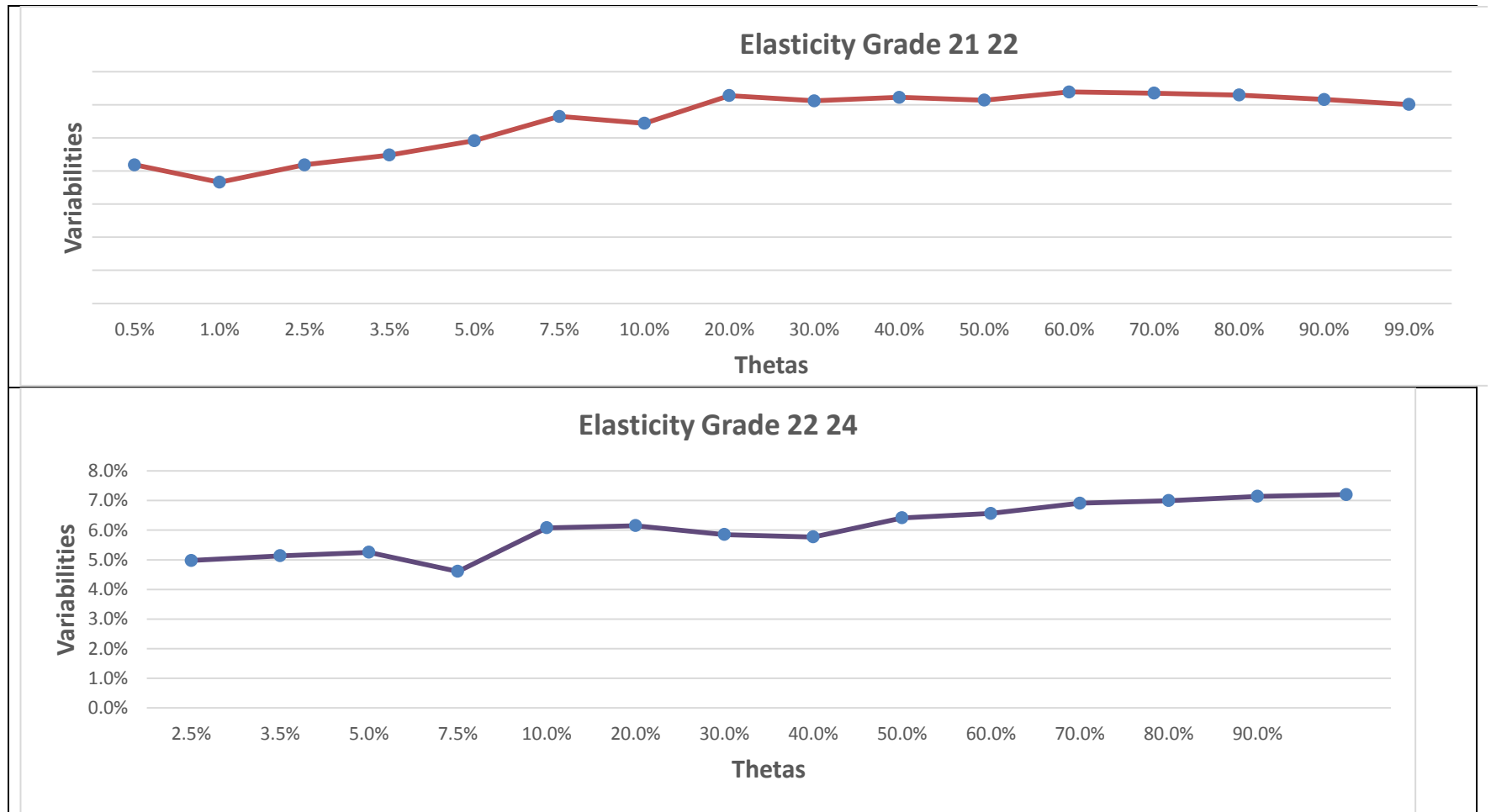
The chart entitled “Elasticity Grade 22 to 24,” shows variabilities were stable between θ s ranging from 10 percent to 40 percent and then 70 percent to 99 percent. Finally, the chart entitled “Elasticity Grade 24 to 26,” shows variabilities were stable between θ s ranging from 30 percent to 60 percent, and then 70 percent to 99 percent.

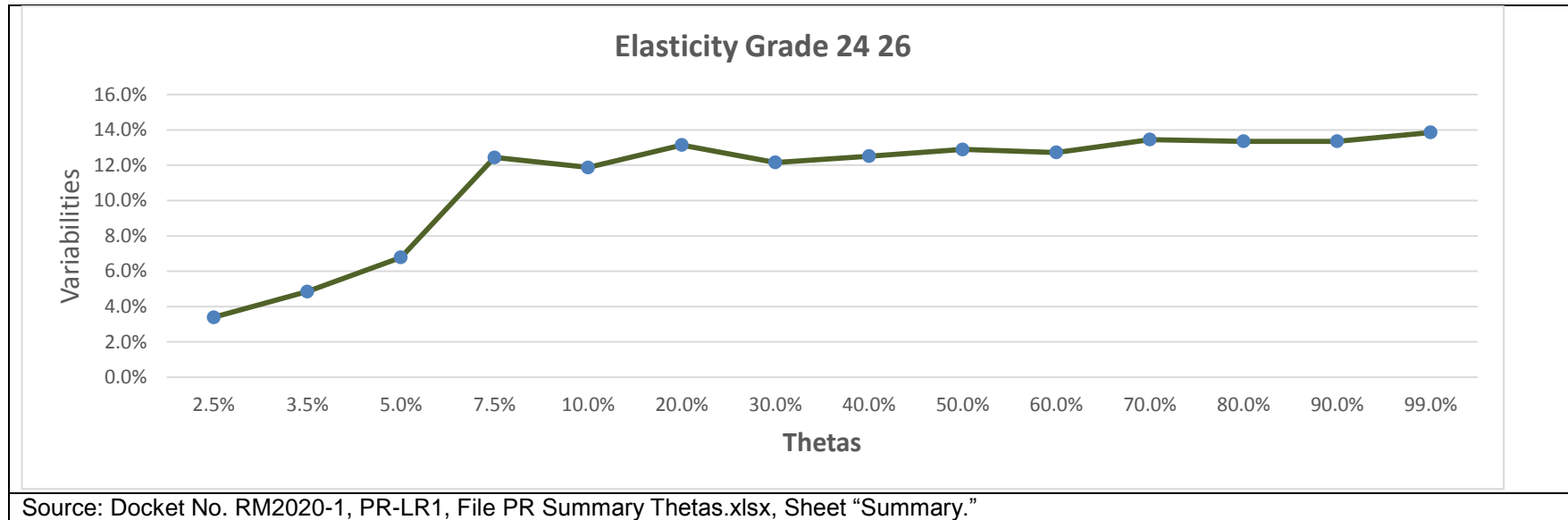
The Public Representative concludes that the Bradley Report could have reasonably chosen a θ anywhere between 3.5 percent and 60 percent, possibly higher. Accordingly, the Public Representative concludes that even if one were to ignore measurement and non-sample errors of WSCs, a key feature of the proposed method’s ability to present a variability similar to current variability of 18.23 percent is without support.

VI. CHARTS









VII. RECOMMENDATIONS AND CONCLUSIONS

The fundamental problem with the Bradley Report is that it used data meant for human resource purposes, not operational purposes. The WSCs appear to have been designed by a task force comprised of 2 postmasters and 5 other persons of unnamed job description. Because WSC ranges, Zone of Tolerance Ranges, and minimum salaries were jointly set by the ECPS Task Force, and subsequently modified by an unnamed department of the Postal Service, the Public Representative believes it reasonable to conclude that these data are primarily intended for human resource purposes.

Because WSCs are so strongly tainted by measurement and non-sample error, the Public Representative has no confidence the Bradley Report's estimates of postmaster variabilities are reasonable. The Public Representative's charts strengthen his conclusion. Even if one were to accept the validity of the data and the decision to estimate binary logistic regressions for each EAS grade, rather than use a multcategory or multinomial logistic regression, choosing the theta value of 10 percent does not withstand scrutiny. The ranges of stable theta values run by the Public Representative would yield very different variability estimates than those presented by the Bradley Report, yet stable theta ranges are so large that choosing any particular value would be arbitrary.

The Public Representative does not have an alternative to present which the Commission might adopt, even with alterations. This is so because an appropriate model would need to identify distinct and non-overlapping activities which drive workload or worktime. It is possible that a close examination of the quantitative indicators of activity could be tested to identify a set of distinct and non-overlapping activities which driver workload. If this effort were to be successful, a new set of data might be developed which were did not suffer from measurement and non-sample error. This would still leave determination of the theta value unresolved.

Because quantity indicators of activity other than those used by Wang and the Bradley Report should be investigated, and because further analysis of an appropriate theta value, and analysis of multicategory logistic ought to be considered, the Public Representative does not believe it possible to address his concerns and develop reasonable variabilities for each postmaster grade in this proceeding. Accordingly, the Public Representative recommends the Commission reject the model proposed by the Bradley Report, initiate a Technical Conference to discuss the feasibility of using alternate measures of workload, which will be followed by either a Notice of Public Inquiry, or a new rulemaking docket to estimate the variability of postmaster costs, depending on the outcome of the Technical Conference.

Respectfully submitted,

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